The Antique Radio Gazette

OFFICIAL PUBLICATION OF THE ANTIQUE RADIO CLUB OF AMERICA

VOL. 16 WINTER 1988 NO. 4

courtesy of John Williams

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It is our intention to have the Gazette published as closely as possible to the following dates:

March 31
June 30
September 30
December 30

The closing dates for receiving material of all kinds in order to have it appear in the next issue would be:

February 15
May 15
August 15
November 15

The Antique Radio Gazette is published quarterly in Madison, Connecticut

Yearly dues of $12.00 U.S. currency are payable to ARCA January 1, of each year for members in the USA, Canada, and Mexico. Overseas dues are $14, which includes airmail postage.

The Antique Radio club of America was incorporated in the State of Kentucky, in September, 1972. The first meeting was held at the Marriott Motor Inn, Washington D.C., on September 23, 1972. At this meeting, by-laws were read and approved and directors selected. We feel that the inception of this Club is a giant step in bringing together those individuals whose chief interest lies in the area of early radio. We invite all collectors and historians of the subject to join the club. A note to William E. Denk, Secretary, 81 Steeplechase Road, Devon, Pennsylvania 19333, will bring you an application blank by return mail.

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President's Page

Another year with a lot of Radio Club activities has past. Radio collecting in 1988 reached unprecedented heights as new regional clubs formed, local and national meets broke attendance records, and the general public was made aware through the radio, television, magazine and newspaper media that radio collecting has become of age. 1988 may well go down in history as the year that radios of all descriptions, from the crystal set to the transistor has impacted on modern man like no other single invention. Radio deserves a well recognized place in world history.

The spectrum of collecting now covers all classes of radio interests; speculators, antique dealers, historical preservationists, the casual collector who desires only a choice radio or two as a focal point in the home or office. Interior decorators have now added a solid looking vintage radio in their decorating schemes.

Another interesting avenue now being pursued is the manufacturing of look-alikes of early radio's best sellers. J.C. Penny's Christmas catalog alone had seven (7) radio reproductions. Table tops to consols. There are G.E. Cathedrals and Catalin reproductions. Where all these "new" old radios will lead to is anyone's guess. You probably will see moderating prices for some of the originals as prices have gone so high. A higher quality reproduction will no doubt appear on the market also.

Mechanical Engineering August 1988 issue has an interesting story on the Smithsonian Institute's National Museum, celebrating 200 years of American-made products. The exhibit entitled, "A Material World", will feature many of the plastics and catalin radios of the 40's and 50's and perhaps other not described in the article. Be sure and see this new permanent exhibit when you are in the D.C. area.

I want to welcome a new writer to our staff. William "Bill" Hoy presented an excellent autobiography at the '88 Spring meet in Charleston. This presentation was reprinted in our Fall issue and Mr. Hoy has agreed to share, on a continuing basis, his story that spans over 70 years in the field of electronics.

Also, we welcome Zane Parsons as the new W.Va. Chapter Editor. We wish to thank Blaine Smith for his past contributions to the *Gazette* as he pursues other interests.

As all by now know, another radio great has closed its doors - WNBC signed off forever on October 7, 1988. I would not, under normal circumstances, use this space for debate. When something like this happens, it stirs some emotion. The G.E. - RCA corporate structuring which occurred in the Twenties is history and well-known to all. What is not known to many is how the two companies became one during the last couple of years. G.E., under a very elaborate presentation to stockholders, the Federal Trade Commission and the public, to some extent, wanted to present itself as the salvation to the domestic electronics industry. By combining forces with the leading television manufacturer in the country, the pooling of resources would put the good old USA back in the ballgame as a leader of manufactured electronic products. All of that lasted until the ink was dry on the FTC consent forms and then G.E. proceeded to chop-up one of our leading corporations into mince meat.

The Domestic Electronics Division was sold to Thompson of France; another foreign competitor. The semi-conductor divisions of both RCA and G.E. were sold to Harris Corporation. RCA records, Hertz and all the other RCA subsidiaries were sold on the auction block to other conglomerates. It is a sad day when the only way companies can conduct business is by the buying and selling of other companies themselves.

I want to congratulate Rich Mendelson of the "Associated Press" for his fine article headlined, "No More Radio City As WNBC Signs Off Forever". Maybe this kind of corporate deceit can be halted before the plug is pulled on yet another pioneering radio great.

Let's keep our club growing, give an interested friend an application for membership. Renew yours and invest in ARCA's future with a "five year renewal". This has been a very successful program and is a vote of confidence in your club.

From the Board of Directors and myself, we wish the best year ever for your family and all of our many friends in the world of radio.

Happy New '89

Lloyd McIntyre

NEW BOOK

Article by Mel Comer

After some years of research and travel, Dr. Max De Henseler has finally completed his book on the Hallicrafters Company.

This book gives the history of the old Hallicrafters Company from its beginning, on throught the war years with all the trials and tribulations encountered. It was indeed a fine company, well-recognized by all the ham operators around the world. Much of this equipment is still in use after many years.

Practically all the receivers and transmitters are pictured in this book, with the pertinent wiring diagrams. There are a number of the old time ads of the company that have been taken from various trade publications.

Several advanced copies have been circulated, but an announcement will be made later on as to the publisher and availability.

NOTICE

To Members Willing to Repair
Old Radios for Others

Following each mention by the media of our hobby and ARCA (the October 1988 Popular Mechanics article was the most recent), your Secretary/Treasurer receives numerous requests for further information. Many ask to whom they can turn for help in placing an old radio in working order. Typically, these sets are AC-operated, and vintage 1929-1950; the writers have found that today's radio service people will not touch the older radios where tubes and exact replacement parts are not readily available.

If you have an interest in repairing/restoring such sets for members of the public in your general area, please write to the undersigned, giving your name, address and telephone number. If there are kinds of problems you will NOT tackle (such as RCA catacombs, or twenty-tube monsters), please specify.

Write to Bill Denk
81 Steeplechase Road
Devon, PA 19333

Please-*DON'T* mention our name in Sheboygan

In the October issue of *Popular Mechanics*, there was a mis-named article "Oldies But Goodies", featuring mostly radios from the Art-Deco age. Our club's address, along with AWA was mentioned at the end, suggesting that we might be a source for estimating the value of the reader's radio. No one told us a thing- until about 125 letters swamped our mailbox. We carefully composed a letter stating that ARCA did not buy, sell or appraise radios. Some people did have good radios- and we have referred them to you if you were nearby. We also pointed out radios are identified by model numbers- not descriptions of a "6½ a 5¼ old wooden box with 3 knobs". Yesterday's mail brought 11 more envelopes - when will I get my Christmas Shopping done?

Jane Denk

OBITUARY

by Mel Comer

It is with sadness that we report the passing of one of our founding ARCA directors, well-known by the old timers of our organization, George D. Greene, at eighty-five years.

George was well-known for his association with the old Kennedy Radio Company, of which he was so proud, as a producer of fine products. He had a quality of humor among his host of friends that we shall never forget. A collector and restorer of the old radio equipment, he also spent many years with his hobby of antique cars. His Stanley Steamer was his pride and joy. His dear wife, Betty, faithfully trailered the Stanley around to many meets for the ribbons he collected there.

He is survived by his son, James Greene, and two daughters and his wife, Elizabeth Greene, of Clayton, Missouri.

New member James W. Yeary of Garden Grove, CA has advised us that he is in the electronic parts business- and sent us a copy of his small, but fascinating catalog. Not only does he stock radio kits- great for Father and Son projects, but also knobs, headphones, spaghetti wire, crystals, cat whiskers, grill cloth, and similar needs. Interested? He has offered to send catalogs to interested ARCA members.

Yeary Communications
12922 Harbor Blvd. #800
Garden Grove, CA 92640

Old Equipment Contest Results
AWA National Conference
September 1988

CATEGORY 1; PASSIVE RECEIVERS

FIRST	Military Receivers Compared	Mike Katzdorn
SECOND	SE143 with SE1071	Tom Pamula
THIRD	Complete Aeriola Jr.	Dick Brewster
THIRD	Ducretet Crystal Set	Andre Chompret

CATEGORY 2; 1 & 2 TUBE RECEIVERS

FIRST	National Monodyne with AMP	Robert Lozier
FIRST	Firth Vocaphone	Ron Frisbie
SECOND	DeForest RJ 4	Don Patterson
SECOND	Acme Detector and AMP	Carl Knipfel
THIRD	Tusca 222	Merrill Bancroft

CATEGORY 3; 3 TUBE RECIEVERS

FIRST	Paragon IIIA	Randall Renne
SECOND	Grebe CR-5, Clarifier, Rork	Philip Trauterman
SECOND	Grebe CR-18 Special	Stewart Mount
THIRD	SCR 59	George Potter
SP. AWARD	INVERSE DUPLEX	Robert Miller

CATEGORY 4; 4 & 5 TUBE RECEIVERS

FIRST	Lyradion	Lou Lindauer
SECOND	Melco Supreme	Tod Prowell
THIRD	Acme Reflex Breadboard	Don Iverson
SP. AWARD	NATIONAL SCREEN GRID 5	John Nagle

CATEGORY 5; 6 & MORE TUBE RECEIVERS

FIRST	Silver Marshall Superhet	John Caperton
SECOND	Hallicrafters SX-25	John Nagle
SECOND	Grimes Viking	Billy Richardson
THIRD	Leutz Reconstruction	Mike Batsch

CATEGORY 6; SPARK TRANSMITTERS

FIRST	SCR 49 Pack Set 1917	Michael Payne
SECOND	Chambers Sparkwheel	Lawrence Chestnut

CATEGORY 7; TUBE TRANSMITTERS

FIRST	RCA ET3619 & ET3620	Nevell Greenough
FIRST	1933 Collins 150WB	Dave Swanson
SECOND	1927 Rel	Bill Fizette
THIRD	Canadian Air 7-1154B	Lloyd Swackhammer

CATEGORY 8; MICROPHONES

FIRST	Western Electric Condenser	Les Rayner
SECOND	Ellis Lab Carbon	Ross Smith
THIRD	Telefunken	Karl-Erik Erikson

CATEGORY 9; KIT SUPERHETERODYNES

FIRST	Ultradyne	Ludwell Sibley
SECOND	Victor Two Tube	Bob Dennison
THIRD	Homebuilt	Bob McGraw

CATEGORY 10; NOVELTY RADIOS

FIRST	Grand Piano	Joe Koester
SECOND	Radio Development Bottle	Lawrence Chestnut
SECOND	Magic Tone Bottle	Geoffrey Bourne
THIRD	Gem-For-The-Lady	Peter Yanczer
SP. AWARD	1933 WORLD'S FAIR	Don Patterson

CATEGORY 11; BEST RESTORATION

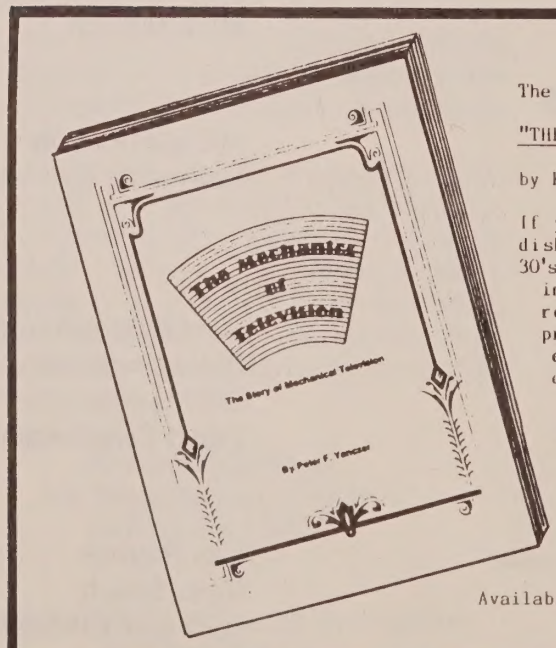
FIRST	Type 10 Tube Transmitter	Floyd Jury
SECOND	GE Portable	Robert Enemark
THIRD	Browning Drake	Leo Kalinosky
THIRD	AK-20 with Speaker	Reginald Collins

ELLE AWARD	Myers Tube Radio	Bob Murray
MATLOCK AWARD	Breadboard Transmitter	John Rollins & Marshall Etter
DISPLAY AWARD	Rel Transmitter	Bill Fizette

EUNICE THOMPSON AWARD FOR BEST ENTRY IN CONTEST

SCR49 Spark Transmitter	Michael Payne

JUDGES	Floyd Bennett	Geoff Bourne
	John Caperton	Charles Days
	Alan Douglas	Bob Lozier
	Orval Parker	Ralph Williams



The story of mechanical television

"THE MECHANICS OF TELEVISION"

by Peter Yanczer

If you want a definitive text on scanning disk television of the late 20's and early 30's, this book will provide an authoritative introduction to the subject. The author reviews the history of early picture producing apparatus and expands it to explain the techniques used in sections of mechanical scanning television systems.

Included is a wealth of information on the construction of workings models of early systems, using modern day component parts.

182 pp (1987) $20.00

Available from: TESLA ELECTRONICS CO.
835 BRICKEN ST.LOUIS, MO. 63122

LETTERS

Dear John,

As I was reading about the "Free Power" receiver in the Summer 88 Gazette, I began to wonder about the resulting effect if everyone employed this method of reception. Also, considering the number of broadcast stations and the vast amonts of RF energy which constantly surround us, why not develop additional uses for this "free power"? After all, if Bud Bedker can get 6 volts at 0.4 MA out of the "ether' to power a radio/loudspeaker, just think what else might be done "for free" in this age of computer chips! Is there a limit?

The following short article appeared in the January 1937 (Vol.7 #6) edition of National Radio News:

"Is there a theoretical limit to the number of Radio receivers which can receive a broadcast from a particular station, asks a Radio fan of General Electrics enginers. By rough calculation, engineers have estimated that within a 100 mile area of WGY in Schenectady, it would be eight hundred billion. That number of sets, all working at once in the area, would probably absorb the energy output of the station; but there are approximately only a billion people in the world, so there seems no danger of this ever happening."

By the way, the enclosed SASE is for a copy of the parts list for Bud's receiver. I assume it was omitted in error and will be included in the Winter 88 edition of the Gazette. But I would like to get started on this free power source as soon as possible.

Sincerely,
Frank Schmidt
1185 E. Via Entrada
Tucson, AZ 85718

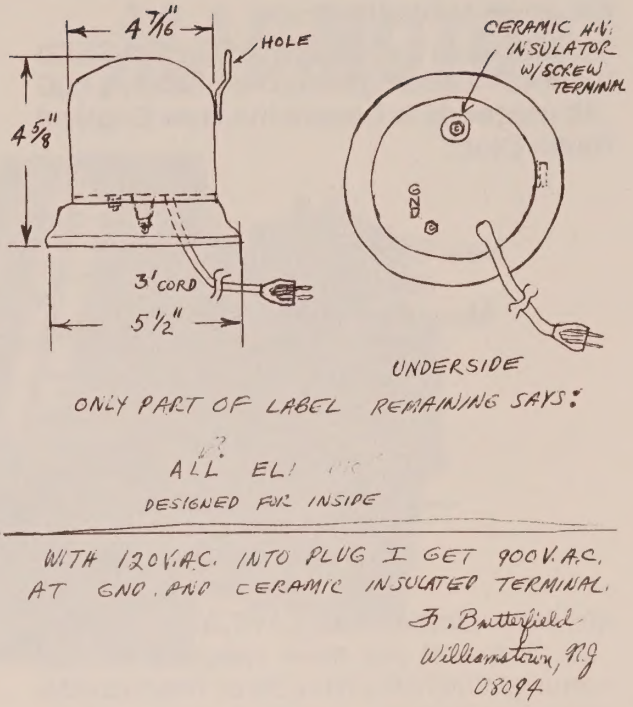
Dear Mr. Drake,

I have a device, evidently a transformer. Most of the label is missing. The case is riveted together so I did not disassemble.

Enclosed is a drawing showing how it looks. I am wondering if any member knows its purpose, and approximate year it was made? I would guess before 1940. When plugged into 120 A.C., it gives 900 V.A.C. output. The container can is steel. Has bracket (to hang it up?)

P.S. I rescued it from trash

Sincerely,
Frederick Butterfield
Rt. 3 Box 394
Williamstown, NJ 08094



Dear John,

First let me say Thank You for printing the write-up for the New England Radio Club October Swap Meet in your Fall issue. The Meet was a great success. The 32 table spaces sold out 1 week in advance and approximately 250 people passed through the door.

If space permits, kindly run the enclosed for the December issue.

We hope to see you at the January Meet. We have reserved the Grande Ballroom and expect a sellout of the 60+ table spaces by December 1st.

Thanks again,
Sincerely,
Marty Bunis, President NERC

ANTIQUE RADIO SWAP & SELL MEET

The New England Radio Club will hold its Winter Swap & Sell Meet Sunday, January 22, 1989 at the Holiday Inn, located on Northeastern Boulevard, Rt. 3, Exit 4, Nashua, New Hampshire.

Participating in this event wil be club members from throughout New England with over 60 tables of antique & collectible radios for sale.

The Meet is open to everyone, members and non-members alike. Whether you're a serious collecter or someone just looking

for that special radio you listened to as a kid, you'll enjoy this event.

8 a.m. to 9 a.m Early Buyer Admission-$5.00
9 a.m. to 12 noon General Admission-$1.00

All proceeds to benefit the New England Radio Club.

New England Radio Club
422 Day Street
Manchester, NH 03104
603-623-8996

Mr. John Drake, Editor ARCA

Mr. Drake, If you have space in the upcoming WINTER EDITION of The Gazette, please consider printing this article. Thank you.

After repairing radios for almost 20 years, I got interested in collecting a year ago and became a member of this fine organization only last January. In that short period, I have been very fortunate to acquire several nice plastic sets, 2 beautiful wood Philcos (42-321 & 42-345), a rare 1937 Climax Wood TRF set, a Montgomery Ward G2-177 Tombstone at a garage sale, for only $5 ! Of course, I had to refinish the cabinet & repair the set. I even have a beautiful Grunow Console that sounds almost as good as my Pioneer Stereo.

You may, at this point, wonder why I am writing this. Recently I saw a small ad in the Sunday K.C. Star. It read "Radios (6) Colored Catalin Phone No! I called the number for information. The gentleman was an antique dealer. He has (3) FADA G52's for sale for $400.00 a piece. Also, some DEWALD & BENDIX sets. I know CATALIN sets are rare, but it seems my collection will be without a Catalin set for the present. How can collectors of average circumstances afford these astounding prices? I acquire old radios because I love them, not for investments. I will stick to estate auctions, garage sales, etc. There are a lot of wonderful old sets out there in Kansas City.

Mark A. Behrens
11116 E. 35 Terrace
Independence, MO 64052

OUR NEWEST MEMBERS

Henry Bertodatto, Lyndhurst, OH
John B. August, FPO San Francisco, CA
William T. Porter, Clinton, NY
Nora Brown, Redondo Beach, CA
Martin Bunis, Manchester, NH
Michael G. O'Leary, Huntington, MD
Lee Buslik, Chicago, IL
Tomme C. Sanders, Bear, DE
Roger Craft, Richmond, IN
Lyman H. Seamans, Jr., Sandy Hook, CT
Dale Cheney, Carson City, NV
Perry Fink, Highland PK., IL
Donald C. Tretlar, Walpole, NH
Jack C. Kaucher, Greenville, OH
James Moneghan, Jr., S. Attleforo, MA
James W. Yeary, Garden Grove, CA
Edward J. White, Wilmington, DE
Frank E. Wiley, Palo Alto, CA
Richard C. Ours, Morgantown, WV

Dear John,

It is with regret that I find it necessary to stop writing a column for the Antique Radio Gazette. This will be the last "Old Timers Page" I will be submitting.

Most of the time I've enjoyed sharing my long years of experience with other antique radio collectors. However, increased household chores and advancing age have taken their toll.

I will continue to be a member of ARCA for a time.

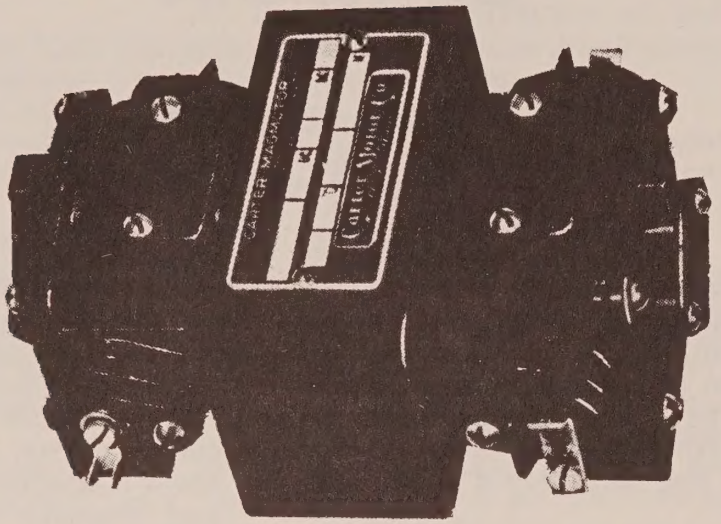
Good luck in your continuing efforts as the Editor of The Antique Radio Gazette.

Sincerely yours,
Jim Fred

We are sure that all members who have benefitted from James Fred's articles will be as disappointed as we are to have this news. We hope that perhaps from time to time we may have the privilege of publishing him again.

Editor

Carter MAGMOTOR*



The Carter Magmotor is the ideal Rotary Power Supply for low power AM and FM mobile radio receivers. Police, Taxicab, and other users report brush life of over 3000 running hours on Magmotors of less than 15 watts output. The higher output models are ideally suited for small mobile transmitters, timing and firing devices, and geophysical equipment requiring up to 80 watts intermittent duty power. An extended shaft can be supplied for small mechanical power takeoff, gear reducers, fans, etc. See item 9, page 21D. All models are supplied in the same frame, illustrated above, and output wattage is determined by the armature windings. High output models have greater armature ampere turns strength and therefore these models should not be operated above nameplate input voltage specifications, as the field strength remains fixed regardless of input voltage. If this condition occurs, intermittent starting or "armature locking" may result.

SPECIFICATIONS

Maximum output volts DC 400
Maximum output watts DC 30 watts, continuous duty
50 watts, intermittent duty
Maximum output voltage AC 220
Maximum output watts AC 10
Maximum output frequency 120 cycles
Input volts from 5.5 to 115 volts DC
Average efficiency 50%, voltage regulation 20%.
AC ripple 1% unfiltered. Average starting time to reach 80% output voltage, 300 milliseconds. Mounting base supplied as illustrated.

MAGMOTOR	Code No.	Input DC		Output		Duty	Shaft Extension
		Volts	Amps	Volts	Amps		
DC TO AC Converter	MA302S	6	8	30AC	.200	Con.	Yes

Carter Motor Co.

General Offices & Factory

2644 North Maplewood Avenue • Chicago 47, Illinois

Old-timer's Notebook

James A. Fred

OLD-TIMER'S NOTEBOOK

James A. Fred

All Rights Reserved

Dear Old Timer:

I purchased a lot of electronic equipment from an estate and one of the items was a Carter Magmotor. It was manufactured by the Carter Motor Company, Chicago, Il. What is a Magmotor, what was it used for, and can I use it or should I throw it out?

A. The Magmotor you found seems to be rather a rare item. I have one that came from the Hawaiian Islands. I am enclosing an advertisement from a brochure put out by the Carter Co. that explains a little about it. The Carter Co. manufactured gasoline engine generators and several other types of power sources. One, the Genemotor, consisted of a motor and generator built into a common frame. It had two field windings, two armature windings and two commutators, one at each end of the armature shaft. A low voltage was fed in to one commutator-armature-field winding and made the motor. The other commutator-armature-field winding produce a much higher voltage. As a rule Genemotors deliver DC voltages ranging from 110 volts to 550 volts. Of course, as the voltage went up the current available came down.

Now for the Magmotor. A magmotor is a form of Genemotor, except that the field is a permanent magnet instead of a wire-wound field. By using a permanent magnet, the current drawn by the field is eliminated and the Magmotor is much more efficient.

As you may have figured out by now, the Magmotor was used to supply the high plate voltages needed by portable radio equipment operated from automobile batteries. Many radio amateurs use Dynamotors, Genemotors and Magmotors to power emergency, low-power radio transmitters and receivers on field days. They were also used to power public address amplifiers used in sound cars or trucks. They could be used to power remote weather observation stations and fire tower radio equipment.

Now what can you do with yours? You could do what I did. I connected it to a power supply, measured the output voltage and compared it to the name plate specifications. It operated OK, so I put it into a box and put it away. However, now that you have asked your questions, I hunted it out and put it on my workbench again.

If you like to build replica radio equipment, you can work the Magmotor into one of your projects. Remember the commutator of the Magmotor will produce a bunch of noise frequencies superimposed on the high voltage DC DC. It will be necessary to put some filtering on the output to eliminate the noise, otherwise your project may not work properly. Write me a letter telling me how you used the Magmotor. I am sure a lot of other electronic experimenters out there also have Magmotors.

Q. I have an audio amplifier that uses four 2A3 triode tubes in push-pull parallel. The 2A3's need replacement, but I hate to pay $20.00 each for new ones. Is there a cheaper tube that I can use?

A. Yes, you can use 6A3's which cost $12.00 each. This isn't much of a saving, but it amounts to $32.00.

As you know the 2A3 has a 2.5 volt at 2.5 ampere filament and a 6A3 has a 6.3 volt at 1 ampere filament. All you need in addition to four 6A3 tubes is a filament transformer rated at 6.3 volts, with a center tap, at 4 amperes. Unsolder the filament wires at the tube sockets, coming from the power transformer. Mount the new transformer in a convenient place. Connect the transformer primary leads in parallel with the power transformer primary leads. Connect the new filament transformer secondary

leads to the same places the original filament leads were connected. Since the 2A3-6A3 tube has no cathode, the grid return will be to the filament winding center tap.

Q. I have a Zenith model 10-S-130 radio receiver with a hum that you only hear when I tune in a station. I've tried all the standard cures for this problem, but nothing seems to help. What do you suggest?

A. There are many reasons for "turntable" or "carrier hum". This type of hum is only heard when a station is tuned in. I've fought this problem in more than one set. I've seen heater to cathode shorts, loose rivets holding ground lugs to the chassis, leaky capacitors, etc.

However, there is a problem with this receiver that is different from most. The power transformer has an electrostatic shield between the primary and secondary winding on this transformer. An electrostatic shield is a piece of sheet copper that is insulated and wrapped around the transformer primary. The ends of the copper are insulated from each other and a lead wire soldered to the copper is grounded to the chassis. The high voltage secondary is then wound over insulation wound over the copper. The copper shield helps prevent noise frequencies, picked up by the primary, from being induced into the secondary winding which would then appear in the "B+" voltage. It seems as thought the ground wire in this Zenith radio transformer breaks and causes tunable hum in the set. The easy way to stop the hum is to connect a .001 mfd. mica capacitor from the AC line to chassis ground. You can also try reversing the AC line cord plug.

Q. I have a Majestic model 90B which plays well, but whistles on all stations above 1000KC. What do you suggest that I do to stop this whistle?

A. If the tubes, resistors, and capacitors all check OK, the problem is with the tuning condenser. The best thing to do is to obtain a spray can of TV tuner cleaner and use it to clean the rotor contact springs. Usually mounted on the separators between the stator sections wil be spring contacts bearing on the tuning shaft. If you look carefully you can see dirt or corrosion on the springs. Some springs can be removed and cleaned, but if they won't come out, use the TV contact cleaner to spray the springs and contact surfaces. Rotate the rotor section then spray again until the surfaces appear clean. Repeat if necessary. This should eliminate the whistle as you tune across the dial.

Route #1, Box 41
Cutler, IND. 46920

In 1919, Marconi bought his yacht, Ellettra, which he equipped as a floating laboratory. Although head of a world-famous commercial enterprise, his consuming interest lay in scientific experimentation and he was never happier than when as shown here, he was at sea on his yacht, investigating new methods of communication and navigation by wireless.

MEL'S CORNER

An interesting story just came to light regarding Sam Diaz Pumera, a scientific experimenter who develops, reproduces and repairs old vacuum tubes for our collectors.

Sam comes from Buenos Aires, Argentina. Now living in Bellefont, Pennsylvania, he has a fabulous shop where he carries on various experimental developments. Sam tells this story as follows:

During World War II, batteries in Argentina were very difficult to obtain, due to the fact that the Eveready Company was tied up with production for the Military.

A Police officer came to Sam one day and asked him where could he possibly obtain some batteries for the Police flashlights? Sam was amazed at this and told the officer if they were that scarce that he would make them some! This the officer doubted, but said OK--go ahead.

Sam then proceeded to make some notes of the elements that he would need. He found that he could obtain 99% pure manganese dioxide from a French Chemical Company; Zinc was easy to get, then ammonium chloride, zinc Chloride, potato starch, blotting paper, and a little mercury to amalgamate the zinc to prevent local action.

His brother cut and soldered the zinc cans, while he amalgamated the containers. The blotting paper served as lining to hold the electrolyte separate from the zinc and from the manganese and carbon mix. He then placed the positive carbon rod electrode into the black mix, tamping it in, with a cardboard washer boiled in wax on top-with asphalt on the rest of the space.

The black mix was a mixture of 40% manganese and 60% carbon well-moistened with a solution of ammonium and zinc chloride-with 2-3% pure water. The positive electrodes were from used cells that the Police had stored.

The tests turned out good. In a short circuit flash test, he got 10 amps-whereas the Eveready cells gave only five amps. This was attributed to the use of pure manganese. Brazilian manganese gave poor results of 4 to 4.5 amps with a voltage of 1.48. Later, in the U.S.A., he purchased some artificial manganese that gave a high EMF of 1.55, but shelf life was not very good as it would have to be mixed with natural manganese. It seems that the best manganese comes from Montes Urales, Russia.

Restoring old cells is not always possible. If the cell is dried up, the injection of a solution of ammonium chloride 40% and water is a possibility if there is some zinc left in the cell. If it is moist, there is small chance of bringing it back. The fact is that the manganese is shot! The manganese cannot absorb any more hydrogen from the negative electrode–being polarized-due to the insulating properties of hydrogen gas in the cell.

People have asked Sam the difference between an ignition cell and a telephone cell. The difference is that the ignition cell contains more carbon than manganese-so internal resistance is small. More current is needed for ignition purposes-whereas a telephone cell has much more manganese with a lot more resistance. The consumption of power in a telephone circuit is very small, but lasting a lot longer.

The telephone cell has a short circuit current of 17 to 20 amps whereas the ignition cell has 30 to 35 amps. The test of these elements must never be made with an ammeter–only with a voltmeter.

To conclude–Sam made his first cells in 1925, at the age of eleven! One caution!! The chemicals involved in these cells and batteries are very poionous. So--be careful!

Back in 1929, Sam read in Popular Mechanics that it was possible to rejuvenate old cells and batteries with vinegar! He tried it--and says the results were not bad.

Any comments on this subject should be directed to Sam Diaz Pumera, 216 W. Pine Grove Mills Road, Pine Grove Mills, Pennsylvania 16868 # Box 245

Cheerio!

THE PENNSYLVANIA MUSEUM

By Mel Comer

It is with great pleasure that we announce the official opening of the radio electronics display at the Museum!!

It has taken many years and a lot of effort to establish a safe, secure place for the rare artifacts of Major Edwin Armstrong's early radio equipment that has been stored by Harry Houck over all these years. Harry has donated all these items to this Museum for preservation in beautiful displays there.

Words can hardly describe the extensive exhibits all shown in numerous glass cases as you wander through this place. At the entrance you will see Harry Houck's 1909 spark transmitter, complete with a four-wire flat top antenna mounted on the ceiling. Case after case of early radio equipment of various types and stages of development, remain to be seen. All in progression, as the times rolled along. An early broadcasting station is shown with all the equipment thereof–as well as a ham station operated by a local club.

Rare military equipment of World War I, beautifully restored and well-identified, are shown there. Cases of tube displays, parts-components--and items of developments-as well as many sets of prominent manufacturers. Also several working exhibits explaining wave propagation.

The Antique Wireless Association has scheduled a meeting at the Museum for April 1, 1989, to view the exhibits, along with a flea market there for the collectors. This promises to be a great meet.

More details on this meeting will be coming at a later date.

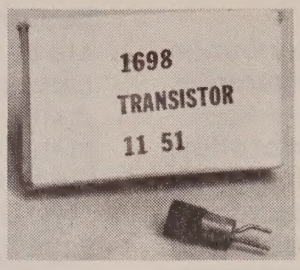
This Museum is located adjacent to the Capitol Building in Harrisburg-3rd and North Streets-on the Capitol grounds.

If you are in this area, the Museum is open Tuesday through Saturdays, from 9:00 A.M. to 5:00 P.M. Also on Sundays from noon to 5:00 P.M. It is a sight to see! Mr. James Mitchell of the Museum has headed this project from its very beginnings. He has set up these excellent displays for which he has our many thanks.

Curator Jim Mitchell with artifacts from 'Machinery Wars' exhibit

TRANSISTOR TOPICS

By ROSS SMITH



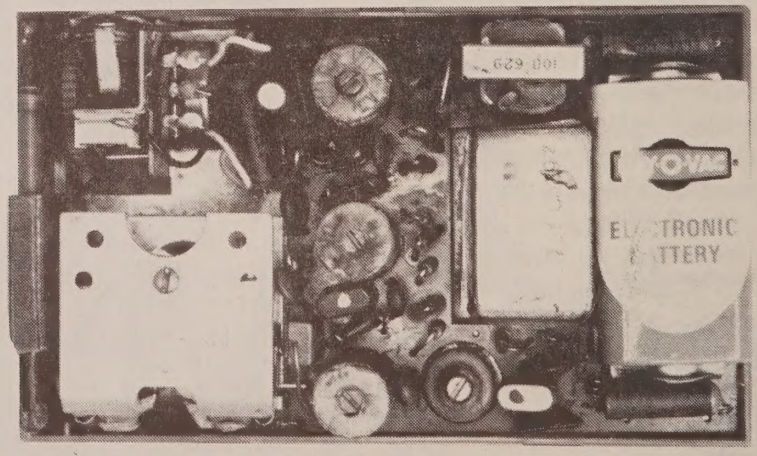
IDENTIFYING REGENCY TR-1 FIRST PRODUCTION SETS

When the Regency TR-1 Transistor pocket radio was introduced in the fall of 1954, it was a radical design for the day containing many newly developed component parts in addition to the new Texas Instrument NPN transistors. The minature 2¾" PM speaker was developed by Jensen for this project. New Centralab Flatcap capacitors were used to save space. CTS supplied the minature volume control. I.D.E.A. Regency Division, as it was called at the time, designed and built a simple spring actuator switch mounted in front of the volume control and operated by a lobe molded on the shank of the volume control edge wheel knob.

The most difficult part to obtain was the minature low voltage electrolytic capacitors. A company in Nashville Tennessee furnished the first electrolytics in phenolic impregnated paper tubes which dried out rapidly and has to be replaced after a short time. This problem was resolved with the introduction of ceramic package electrolytics made by I.E.I. Company. Vokar produced the minature 262 Kc I.F. transformers. Low frequency was required because of a 3 to 6 Db loss per stage at 456 Kc with the germanium grown junction transistors of the time.

Radio Condenser Company designed and produced the open air two section variable tuning capacitor in a compact 15/16 inch frame for the TR-1. Because of the narrow frame, a thrust bearing adjustment in the form of a round head screw had to be added to the back bearing of the capacitor. Spacing of the plastic case was so close that a round depression had to be molded into the inside of the lid to provide clearance for the round head screw on the back of the capacitor. Early production sets may be identified by the presence of the adjusting screw as shown in the picture below.

The above information was furnished by Mr. Richard Koch of Regency Electronics in March of 1983. Mr. Koch was the design and production engineer for the TR-1 project.



NATIONAL

by Larry Babcock

The following article was reconstructed by Larry Babcock from a talk given to the Niagara Frontier Wireless Association, (N.F.W.A.) by Ken Conrad in 1983. Kenny was an ardent collector and historian of the National Company prior to his death in the summer of 1988. The National information presented is all from Kenny. The information was preserved by Larry Babcock for this report.

Back in the 1930's the outstanding commercial radio equipment was made by the National Company in Malden, Mass. They had an assortment of sets. Most were for short wave work. They made the SW 3, the SW 4 and the SW 5. The number in the model number was the number of tubes in the set. They were 3 to 5 tubes and all were regenerative. They all had one or two stages of R. F. amplification. The SW 5 had two stages. The SW 3 and SW 4 had a single R.F. stage.

In the early 1930's National also made the AGS which is highly sought by collectors these days. There were only a few ever made. Less accessories, and that means less coils, less power supply, less tubes, less speaker, less everything except the box listed for $180.00. In those days that was a lot of money, more than ⅓ the cost of an automobile, so you see why very few were ever made and very few amateurs could ever buy one. Remember in 1932 and 1933 there weren't very many dollars around. Only a few affluent hams could buy an AGS.

Back in 1933 the state-of-the-art of short wave reception was very poor compared to nowadays. Most hams had home made two tube regenerative sets with a detector and one stage of audio. A few owned the National SW 3 which also had an R.F. stage (plus regenerative detector and an audio stage). The most advanced amateur who has some cash (a few of them did but not me) spent up to $100.00 for a Hammerlund Comet Pro. A lot of people remember this set but it was not very good.

It didn't have an R.F. stage. It had poor selectivity and a superhet was not suited for short wave reception in those days. A good regenerative set like the SW 3 could run rings around a superhet with no problem at all! There was a real need for a good superhet like the AGS to be built.

In an article from CQ magazine written by James Millen of Nationnal it was stated that "It was in this chilly atmosphere that James Milen who was W1HRX and other engineers of the National Company commenced to design an advanced short wave superhet". The initial requirement came from the federal government.

The Bureau of Air Commerce which was the predecessor of the present Civil Aeronautics Authority was in the process of replacing the revolving light beacons used for air navagation with a comprehensive ground to air radio network. The communications system was divided into three groups. First, the ground transmitting equipment was to be developed and manufactured by G.E. The airborne radio equipment developed and manufactured by Aircraft Radio Corporation who later developed the SCR 274N. The ground station receivers were designed and manufactured by National. The BAC and National signed a contract to produce several hundred AGS receivers to replace the antiquated sets in use at that time. Incidentally, AGS stands for Aviation Ground Station.

W1HRX started to work on the AGS design and became the leader of development. He didn't have much to go on. His previous experience was with the old Browning Drake set of several years previous along with the SW 3 and SW 5 of National. The problems to get a good short wave set in those days were tremendous.

The first AGS receivers were made on a government contract with a few commercial sets also sold to affluent amateurs. The difference between the contracted ones and those sold on the open market was just in the name plate.

There were only between 200 and 400 sets sold to hams. That was very few even in those days and is why there aren't very many around today. The AGS was very shortly made obsolete by the HRO. The AGS used a new crystal filter just being developed. It was a single conversion superhet. It had one R.F. and two I.F. stages, an

AVC, VFO and audio stage. The crystal filter was available if ordered special. With it the receiver was named the AGSX. Ken Conrad's AGS shown when he first gave this talk to the NFWA was the original type without crystal filter.

The intermediate frequency was 500 KHz. There is no automatic volume control in this set. None at all. The volume was adjusted only by the bias control potentiometer for the R.F. and I.F. stages. AVC was applied to the first detector, a scheme frowned on today as the ever changing control voltage tends to pull the high frequency oscillator and causes strong signals to flutter but they got around this. In the AGS they injected the local oscillator signal into the plate circuit of the R.F. amplifier and inductively coupled the mixing signal into the first signal. That was how it was done.

Some aspects of the design were amazing. How to control the inductance and capacitance and make the tuned stages all track, that was a real job and to keep it right on the button! They figured that plug in coils were the way to go rather than having the coils permanently wired in. The AGS has five sets of three coils each and on the panel there is a chart which shows the frequency band covered by each set of coils.

This helped the operator pick out the ground station that he wanted to monitor. The tuning capacitors were hand measured. The the tuning range and oscillator tracking were corrected by moving a tap on the wire connecting the tuning capacitor to the plug in coil. That was the final adjustment.

Using hand labor for calibration of course is impossible today because of the price of labor but in those days an engineer got a salary of $20- to $40- per week! Imagine that. Technicians earned from 20 to 35¢ an hour. This is why each AGS could be hand calibrated and the chart was right.

The chassis was made of heavy drawn ⅛" thick aluminum. The panel is very heavy steel firmly bolted to the chassis. This made a very rigid and absolutely tight assembly. The tuned frequency wouldn't change even if you dropped the set on the floor. The high frequency oscillator is in the middle of the unit and driven by a disk dial.

This receiver has a very unusual dial. It is the same as was later used on the HRO. The dial has five openings and is calibrated from zero to 500. Each time that the dial is turned passed one of the little openings, the scale is automatically changed. The number viewed through the hole jumps another fifty points! Each one of the line segment divisions onthe dial is one of the 500 divisions that just cover a band. You can read to one tenth of a division directly and each division is equivalent to about 1 KHz so you can get down to 100 cycles direct reading. A heck of a lot of the receivers today don't even get near this. Imagine, this was over 50 years ago! The AGS was designed to work forever. You turn one on today and it will work immediately. Even if it has not been operated for fifty years that set will work!

The SW 4 and SW 5 both had plug in coils. Both were shown when Ken gave this talk to the NFWA. Incidentally, before his death, Kenny donated his entire (large) collection of National receivers to the AWA and they are currently on display in the AWA museum. The SW 3 was introduced by National in 1931. It was a low priced set. Because of its very light weight, it was adapted for use by the airlines.

At that time other aircraft receivers were heavy things and didn't perform too well. They had poor selectivity and were bothered by the planes ignition system.

Pan American was about to start flights to South America and needed a very light weight receiver. The only sets available at that time were the National SW 4 and SW 5. They were too big, too heavy and another problem was that the coils would absorb moisture when flying over the ocean. This made the tuned frequency wander all over the place.

In about 1930 the old Boonton Rubber Company started making Bakelite coil form moldings for their sister company the Boonton Radio Company. The molding powder sold by the original Bakelite Corp. was based on the use of wood filler which was very hydroscopic.

Molding in those days was done with steam, not electric heat and as a consequence the molding rooms were extremely humid. The coil forms molded by this process varied tremendously in Q. Good and bad coils looked just alike. You couldn't tell a good coil by looking at it. To solve this problem the Boonton Rubber Co. changed from the old filler to ground mica and electrically heated presses. For the first time this method made uniform inductors. The new material was called R39 and was registered with this trademark. This new material was used in making the SW 3 starting in the summer of 1931. During the long and usefull life of the SW 3

over 10,000 sets were made and used by everybody including Pan Am. It is still a good receiver today. The SW 3 had tremendous range. You could get coils all the way from 9 to 2000 meters! The SW series sets are collectors items today and they are good ones. They are so stable that you can read sideband on them with no problem!

National used separate power supplies for many years because of the heating problem. With the power supply separate the heat from the power transformer and rectifier didn't raise the temperature of the receiver and change the tuned frequency. With everything in the same box the temperature would not stabilize for a long time and the frequency would drift until then. The power supply provided about 200 volts to the plates.

Manufacture of the SW 3 continued for many years. The original had tubes with 2.5 volt filaments. Later they were made with 6 volt tubes and even with metal tubes before production finally folded.

The little National model 110 was also shown when Kenny gave his talk to the NFWA at the Buffalo, NY meeting. The #110 is a four tube super regenerative set. The tuned R.F. amplifier uses a very tiny type 954 tube. The detector was a type 955 in a self-quenching super regenerative circuit. It was transformer coupled to the first audio stage, a 6J5. The 6J5 was then resistance coupled to the 6V6 output stage. This was unusual. Kenny said that he didn't know the reason why National designed it this way rather than using transformer coupling for the added gain, but that was the way it was done.

The model 110 had six separate pairs of small little clear plastic coils. They are extremely small and so shaped that they can be picked up and plugged in very easily. If you picked them up by the coil itself it would probably collapse because they are so small and delicate. This set will get down to 300 MHz. It tunes the one to ten meter band and it will get down to one meter. This was a long time ago too, way back in the fortys. (I liked the way Kenny said "down to 300 MHz" rather than up to 300 MHz. Here's a man who still thought in terms of wave length rather than frequency like us young guys!).

The model 110 had a separate A.C. power supply or could be operated with batteries. The manual didn't give the price but did have charts giving the frequency coverage for each set of plug in coils. It also had the same unusual tuning dial that was first used on the AGS.

The HRO is my favorite receiver. Some of the commercial airlines used the National AGS, but others wanted a little better receiver. They wanted one for CW that could also work with the new Western Electric phone transmitters (voice) that were about to be installed in aircraft.

Now consider the state of the art in 1933 and 1934. The great majority of hams had home made regenerative sets or SW 3's. A superhet was useless, they thought, for CW and pretty poor on general shortwave. It was considered a great thing to get anything on a shortwave superhet so National started to develop the HRO. It was a coordinated effort. This receiver as developed on the east coast and the west coast of the U.S. at the same time! There was 3,000 miles separating the mechanical and electrical design teams! Wasn't that crazy? Wow. The west coast HRO team was coordinated by Herbert Hoover Jr.. James Millen was in charge of the group on the east coast. They were in a hurry.

The tool makers required a job number for their overtime slips. Since none had been assigned, they took it upon themselves to use the initials "H" "O" "R", or "HOR" abbreviated from "Hell of a Rush!" since that was the state of affairs. Now known as the HOR the new prototype was carried by Millen to Pasadena for circuit revision. Bugs were worked out. It was a success. By this time however, some of the participants had doubts about the name. So they therefore renamed it the HRO. This change was made just in time to catch the first ad in December 1934 QST.

But I have digressed from my story. Getting back to the design, Herb Hoover, Jr. set up an experimental laboratory in his garage under the direction of Howard Morgan of Western Electric. Howard and his technicians went to work developing a circuit based on experience gained with the AGS and what the airlines were looking for. First the specifications were established. It had to have superior image rejection which called for two stages of R.F., not just one. The selectivity would require a crystal filter be included. Jim Millen had designed what they called a epicyclic dial so you could read to one part in five hundred. In other words the band spread on that

dial was over 12 feet on a ham band!

The specifications for the HRO also required very good AVC and an S meter. The designers believed that plug in coils were the answer. They didn't want band switching and instead planned to have a new four bank plug in coil catacomb. Each coil deck had its own calibration chart. To reduce hum and heating effects the power supply was separate. As a whole, the receiver was years ahead of its time. It is one of the first examples of system designed equipment otherwise unknown before World War II.

The HRO was very outstanding, a classic. It had two R.F. stages, a crystal filter, two I.F. stages, AVC, BFO, and 450 degrees band spread on any amateur band!

There was a system built into the catacombs. Each coil had two little screw holes with little machine screws in them. If you put the screw in to the hole on the left you get general coverage. When you remove the other one you get just the ham band over the whole dial. It was simple. The screws just shorted a condenser or opened one across part of the coil. But it worked and it gave tremendous band spread!

At first there was a lot of drift but in working on the problem they found out that most of the drift was in the oscillator tube and they were able to eliminate the problem. The HRO was so beautifully made that it would be impossible to build today. It would cost hundreds of dollars just to make the coil forms, the tuning condensers and the insulators. There was so much hand work in both the mechanical and electrical calibration.

One of the early owners of the HRO was Charlie Kolster. He was so impressed with his set that he suggested that Jim Millen replace his old two district call sign with a first district and have 1HRO in honor of the set. But the FCC goofed and he ended up with 1HRX. That was how the FCC did things. In spite of the call sign mix up, the set was an instant success.

Braniff Airlines bought a lot of HRO receivers. The set was so far ahead of the time that they found it could be operated unattended. They installed a lot of HRO receivers on telephone poles spaced 50 miles apart. That way they could get the coverage to communicate with airplanes all along their route. At that time there was no radar, or beacons or anything. So they mounted HRO's in boxes on poles every 50 miles along the main route of the aircraft. These receivers ran continuously 24 hours a day! They were tuned to thirty one hundred and five kilocycles (KHz) which was the aircraft frequency.

The receiver outputs were patched into land lines and could be monitored in Kansas City, Dallas, Tulsa, Oklahoma City, or anywhere. They had continuous voice monitor of the planes all along the route. That's where the HRO got the big impetus. Also Howard Hugh's flight around the world used the HRO. He had two at each ground station. That is what he thought of the HRO!

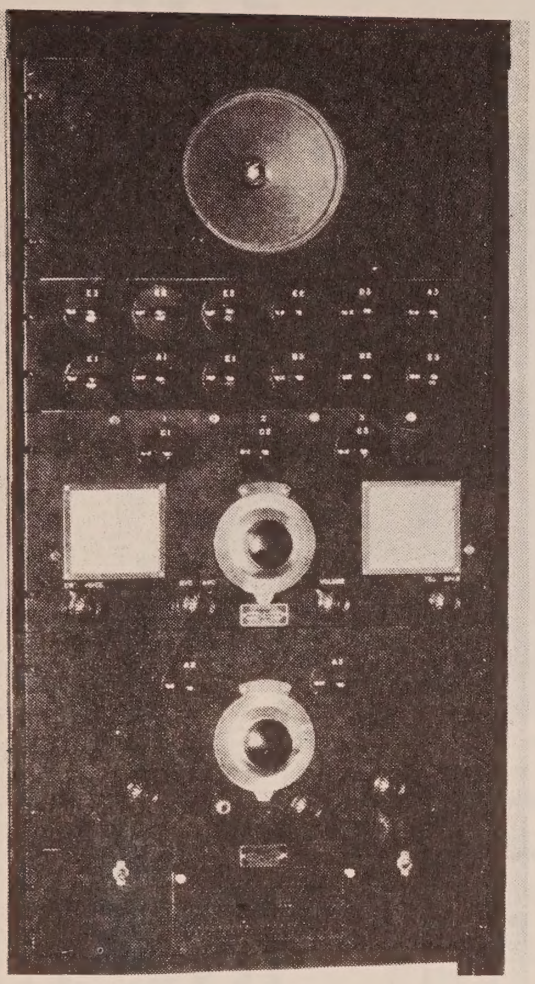
The HRO was so designed that with the crystal filter, now this is almost unbelievable, you could get down to 20 cycles! (Hz) That's the selectivity of the HRO., twenty cycles! (Not kilocycles) That is better than practically any set made today, and this was over fifty years ago.

The HRO remained popular until after World War II. By then SSB was coming in and the HRO was finally on the downgrade. That is the story of the HRO. It was a wonderful set. I don't care what they make today, what the price is or anything, they don't make them to have the design, the selectivity and the durability! After fifty years I can turn one on and she'll still go. They are well worth the time and effort to restore.

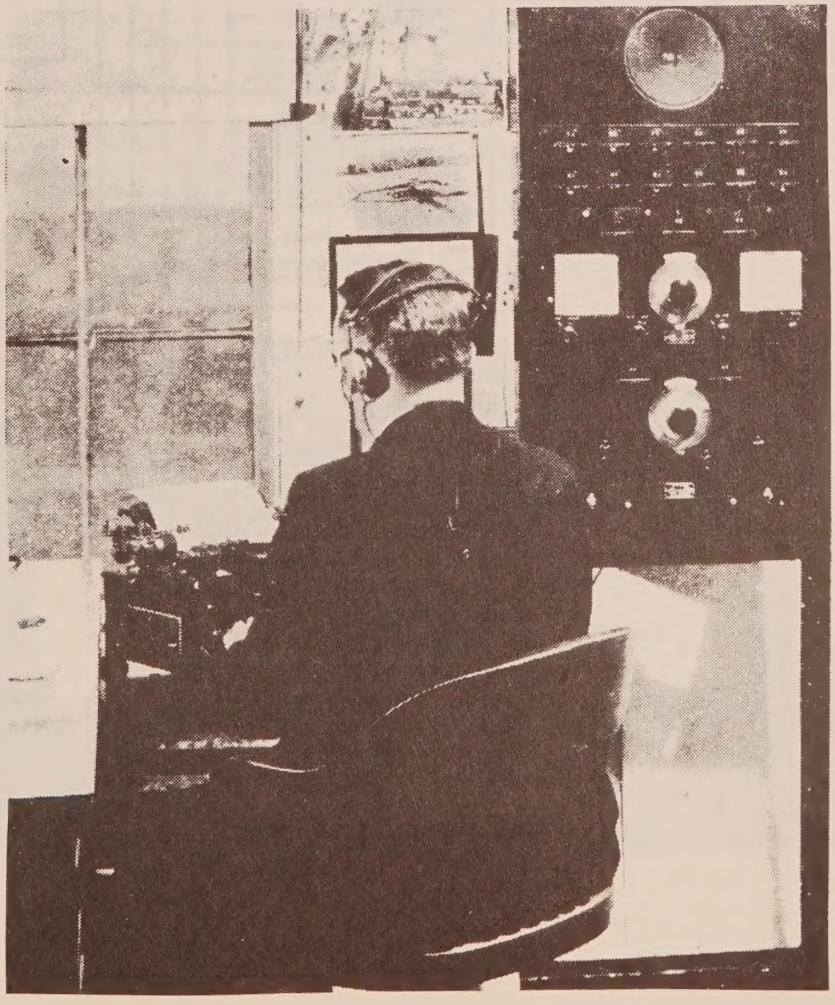
QUESTION: Ken, did anyone ever make a rack mounted HRO like your AGS?

ANSWER: Yes. And they were provided with a door to slide the coils in and out of the set.

The foregoing article was written from a talk given by Ken Conrad to the NFWA antique radio club at their August, 1983 meet. On display, were the AGS, SW 3, SW 4, SW 5, HRO, 110 and other communication sets made by National in the early 1930's. Many of these identical sets and more may now be seen in the AWA museum, E. Bloomfield, NY. L.F.B.

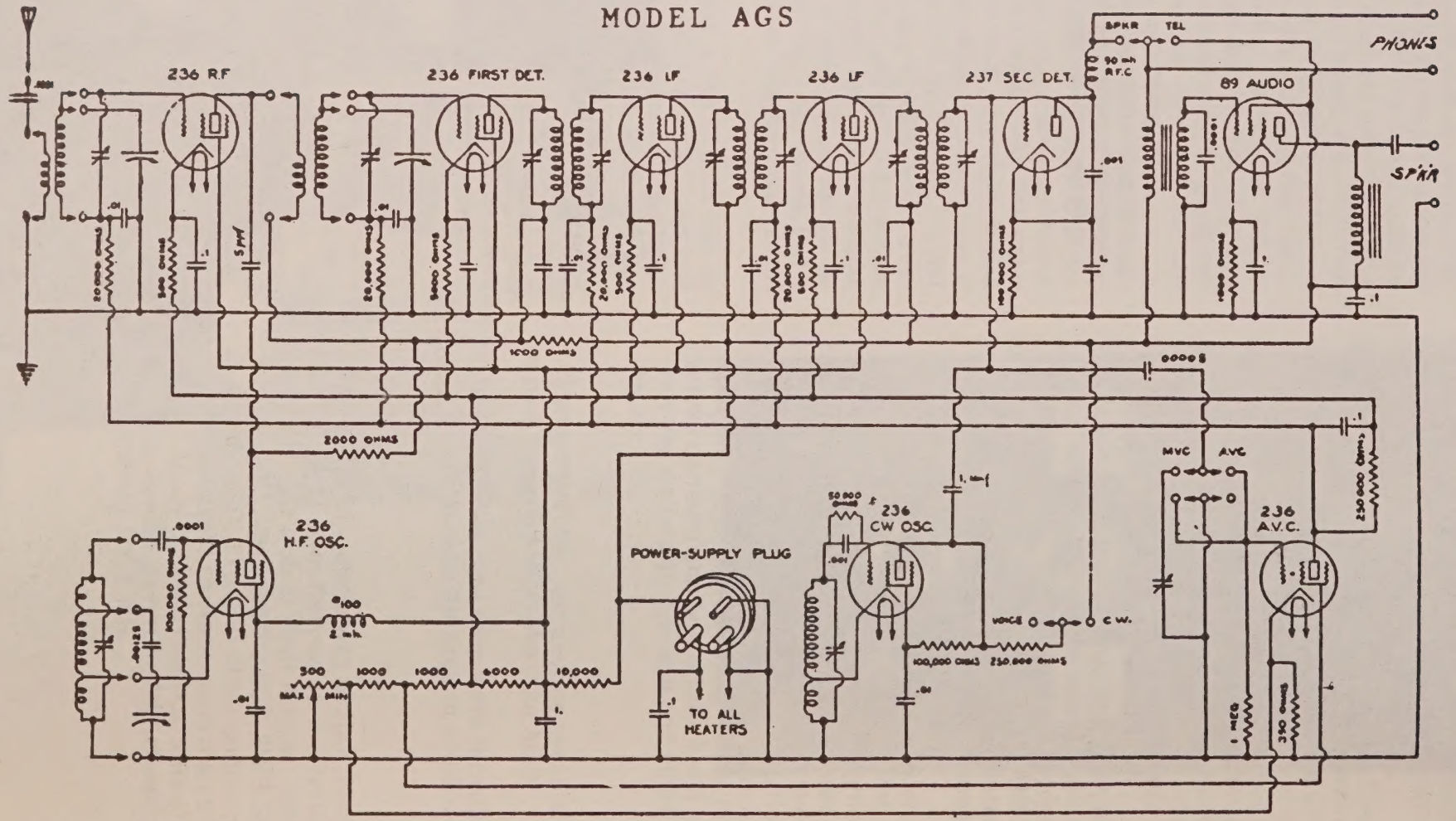


IN A COMMERCIAL SET-UP
Another view of the receiver as used in commercial airport installations. Details of the five panels are given in this article.

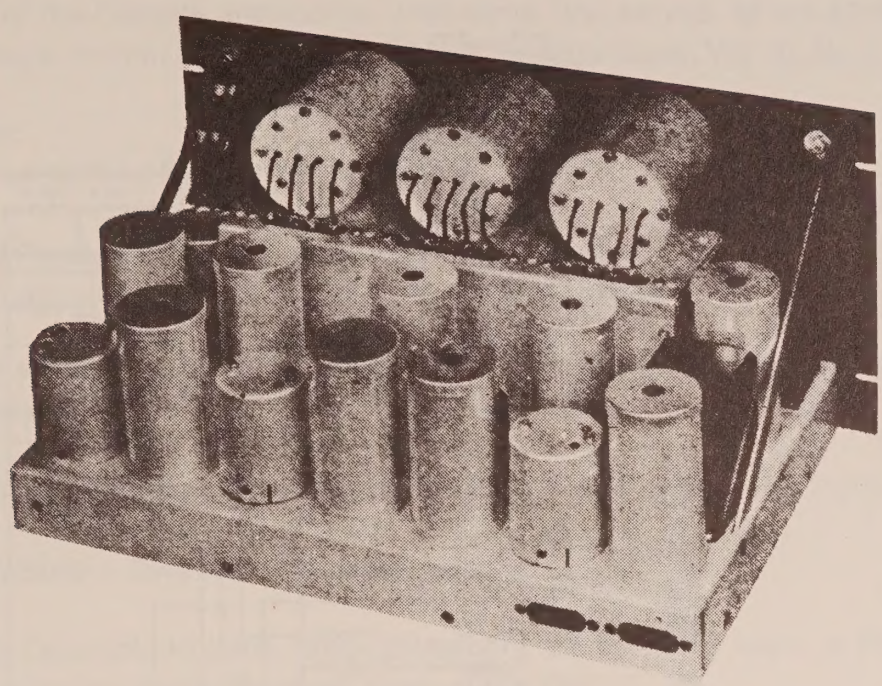


NATIONAL COMPANY
MALDEN, MASS.

MODEL AGS



AGS

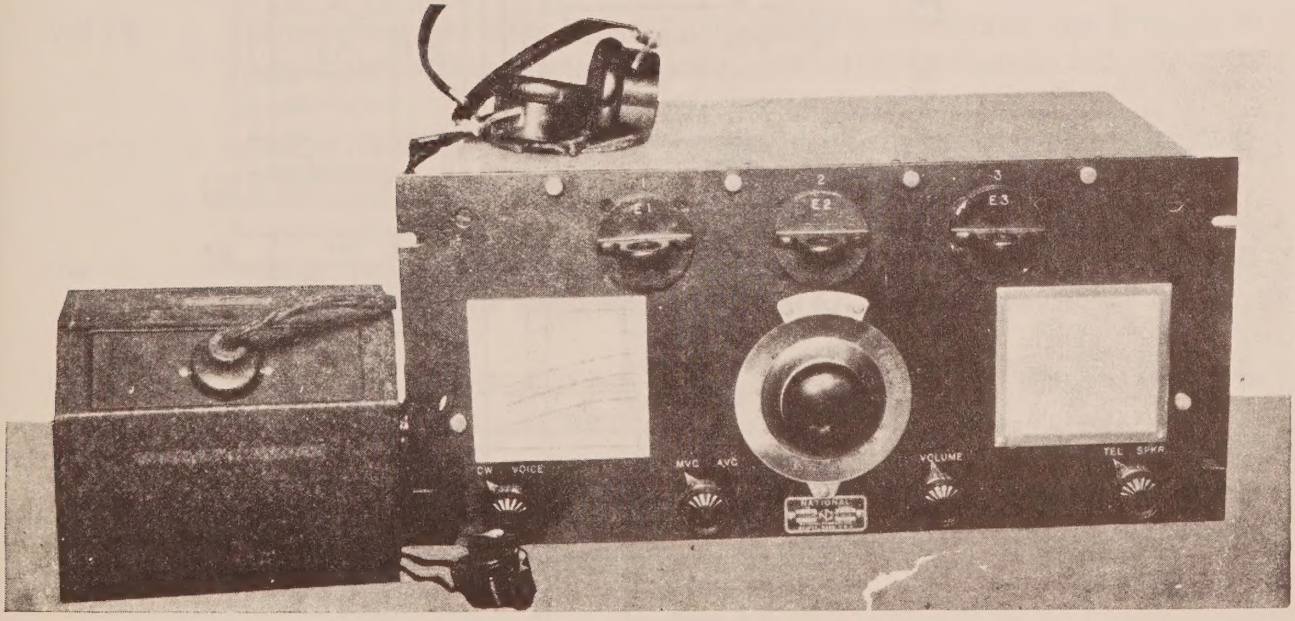


THE OVERALL SHIELD REMOVED

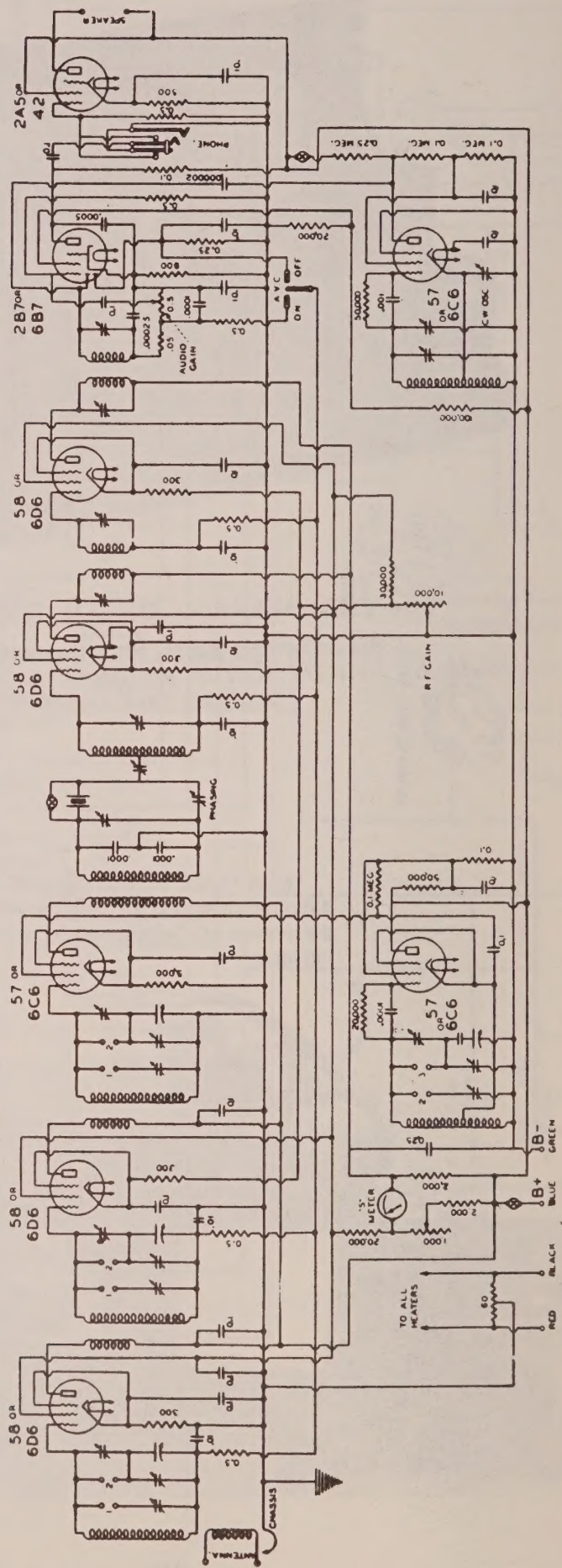
All important parts, including tubes, are individually shielded. Note the slots in projecting ends of front panel, to facilitate rack mounting

AS A TABLE MOUNTING UNIT

Although designed for rack mounting, the receiver can be placed on the operating table.



SCHEMATIC DIAGRAM — TYPE H.R.O. RECEIVER.



NEW MEMBERS

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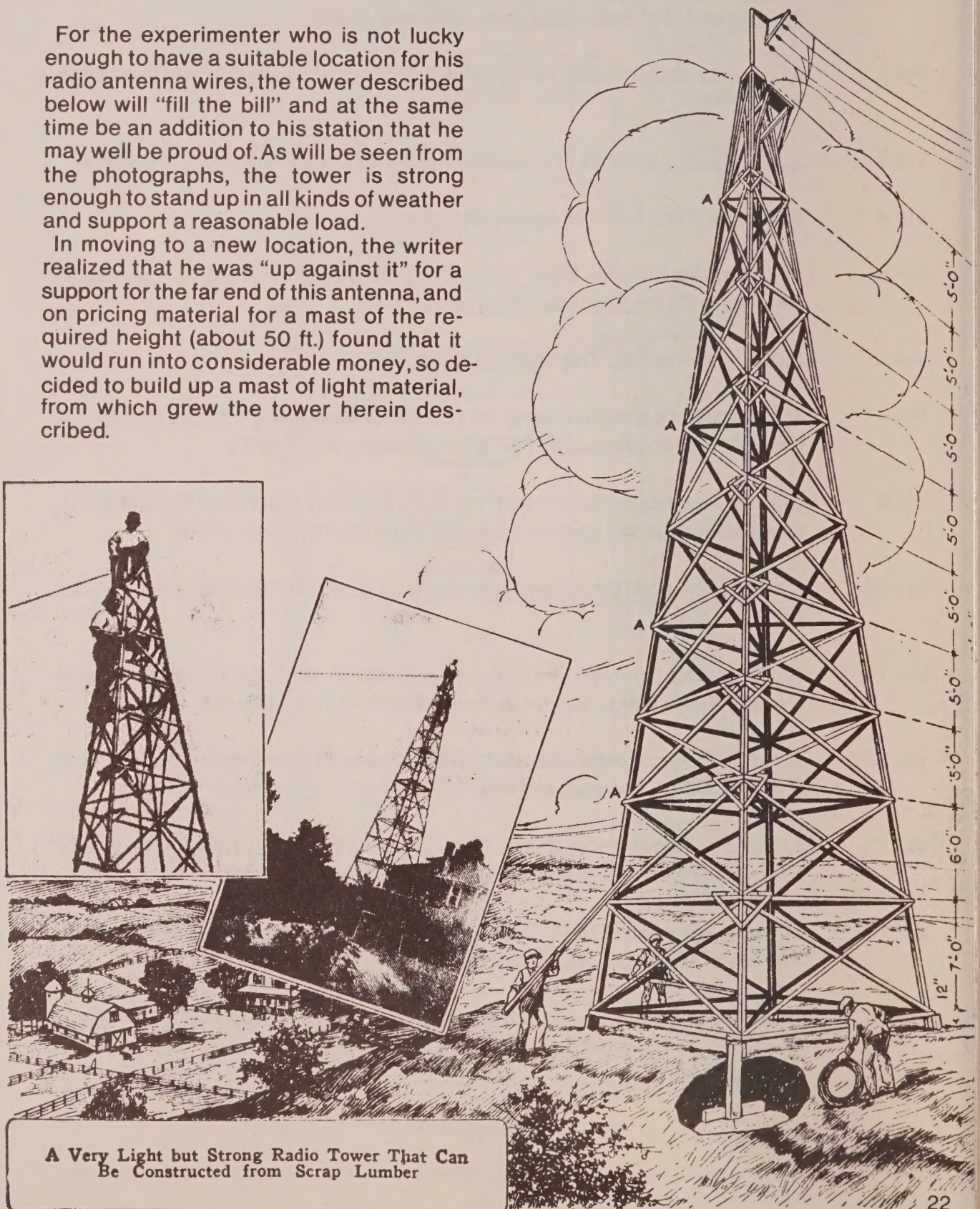
Building a Radio Tower

By R. DeWOLF

For the experimenter who is not lucky enough to have a suitable location for his radio antenna wires, the tower described below will "fill the bill" and at the same time be an addition to his station that he may well be proud of. As will be seen from the photographs, the tower is strong enough to stand up in all kinds of weather and support a reasonable load.

In moving to a new location, the writer realized that he was "up against it" for a support for the far end of this antenna, and on pricing material for a mast of the required height (about 50 ft.) found that it would run into considerable money, so decided to build up a mast of light material, from which grew the tower herein described.

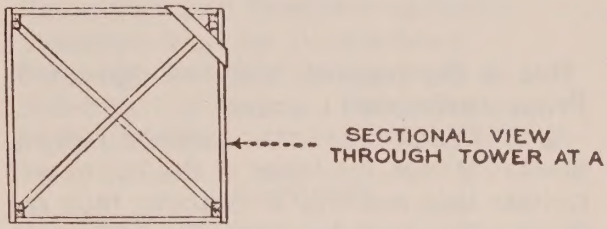


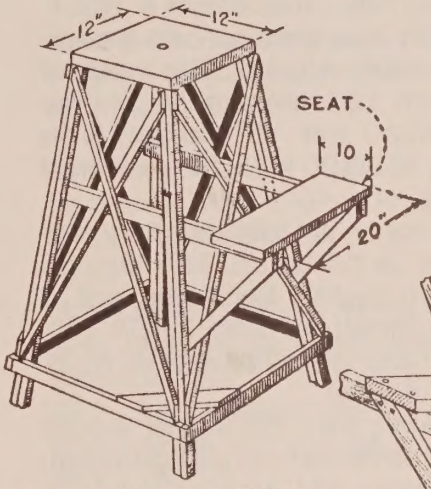
A Very Light but Strong Radio Tower That Can Be Constructed from Scrap Lumber

The material varies from ⅞ in. square to about 1¼ in. square, with a few pieces at the top about 2 by ⅞ in., all of which is a cheap grade of pine lumber. It was obtained as scrap from a near-by template shop, at $1.50 a load and varied in length from 10 to 15 ft. The cost of the completed tower, including nails and paint, therefore, was only five dollars. This, of course, was a particularly lucky bargain, but nearly everyone can dig up somewhere about the place a few feet of 2 by 4-in. stuff for the "dead men" used to anchor the tower at the corners, and exclusive of Ithese, the necessary lumber could be purchased for from $6 to $10 depending upon the location. A gallon of paint at about $2.50 and 5 lb. of eight-penny box nails are the only other materials required. The tower is made up of four sides, all similar, as shown in the drawings. Each joint is fastened with two nails; box nails being used because they have a large flat head, are of soft wire and are easy to clinch. Each side was made complete and the four nailed together before the tower was finally raised and anchored.

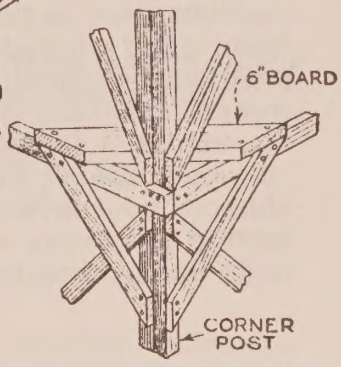
By building the tower in this way, a double post was obtained at each corner where the sections are nailed together. These should be well fastened with nails spaced about 6 in. apart and clinched, thus forming a good stout compression member at each corner.

Referring to the drawings it will be seen that there are five sets of horizontal cross-braces, which serve to tie the structure solidly together, and at the same time act against any twist that may be set up by the tension in the antenna wires. After the tower is raised the location for the "dead men," or anchors, may be marked and the tower lifted to one side and the holes dug. These anchors should be buried to a depth of about 3 ft. and the earth well packed down over them. On recent examination, the writer has found after some four months of service, that this tower is apparently in as good shape as when first erected and bids fair to stand for quite a long time.





VIEW OF TOP OF TOWER SHOWING SEAT



DETAIL OF CORNER OF TOWER SHOWING STEPS AND BRACES

PRESSURE TREATED LUMBER

2x4x6 ..... $1.49	2x6x6 ..... $2.49	2x8x8 ..... $4.25	2x10x8 ... $5.99
2x4x8 ..... $1.67	2x6x8 ..... $3.59	2x8x10 ..... $5.80	2x10x10 .. $6.35
2x4x10 ..... $2.51	2x6x10 ..... $3.74	2x8x12 ..... $6.79	2x10x12 ... $9.40
2x4x12 ..... $2.90	2x6x12 ..... $4.99	2x8x14 ..... $7.98	2x10x14 ... $13.20
2x4x14 ..... $3.30	2x6x14 ..... $5.89	2x8x16 ..... $9.05	2x10x16 ... $14.99
2x4x16 ..... $4.49	2x6x16 ..... $7.10		

4x4x6 ..... $3.49	*DECKING BOARDS*	
4x4x8 ..... $3.69	5/4x6x6 ..... .98¢	5/4x4x6 ..... $2.39
4x4x10 ..... $5.99	5/4x6x8 ..... $1.39	5/4x4x8 ..... $3.19
4x4x12 ..... $7.29	5/4x6x10 ..... $2.39	6x6x8 ..... $3.99
4x4x14 ..... $7.99	5/4x6x12 ..... $4.59	6x6x12 ..... $4.59
4x4x16 ..... $9.40	5/4x6x14 ..... $5.59	8x8x16 ..... $5.59
	5/4x6x16 ..... $6.59	

Prices may vary in your region

A FEW OBSERVATIONS ABOUT THE RADIO TOWER

Per 10' Section		
4-4'x4'x10'	$5.99	$23.96
4-2'x4'x12'	2.90	11.60 To be cut in half
8-2'x4'x12'	1.67	13.36 To be cut in half
32-½"x6" Bolts	.50	16.00 Galvanized Carriage
5-½" x 4" Bolts	.40	2.00 Galvanized Carriage
2-2'x4'x8'	1.67	3.34 Inside cross bracing cut to 2'
1-2'x4'x8'	1.67	1.67 lengths for fish plates on legs
16-½" x 6" Bolts	.50	8.00 Fish plate bolting
		$80.00

This is the material needed - Grade 1 Pressure-Treated Lumber.

As the tower rises to the desired ;height, 50-60-70 feet, the taper of the tower will require less material in bracing, thus reducing the cost for each ten (10') foot section.

How does this cost compare to a commercially available tower? The cost of Rohn 45G with 18" centered legs now exceeds $200.00 per 10' section. The cost of 55G is $250.00 with 18" centered legs.

Anytime you construct towers, many precautions have to be taken. This design looks good on paper, but I am not a structural engineer. Neither ARCA nor myself accept any responsibility as to its soundness of design.

It would appear that the tower would support about any antenna configuration, both of long wave AM type or amateur radio transmitting beams. If anyone decides to build one of these towers, please mail us a picture and we will publish the best one in the Gazette.

Another big advantage of this tower, besides being apparently self-supporting, is that some manufacturers have as much as forty year warranty on their pressure-treated lumber. With good concrete foundations and an annual inspection, this type of tower could last as long or longer than many steel towers.

Check your local codes and your neighbors' feelings before you start. This might be a nostalgia trip for you and a thorn in the eye for someone else.

To give you an idea of different lengths of lumber available, and the prices, we have reprinted a price list from Lowe's Lumber dated September 11, 1988

Another idea for the use of the base of the tower is a storage building. The base supports and corner supports are ready for siding and a roof.

Good Luck and safe building.

Lloyd McIntyre

All ads and Swap Shop items are printed in the Gazette free of charge. We do ask that you write your ad on a separate sheet of paper, type if possible, or print, and be sure to include your name and address. We reserve the right to edit all ads. ARCA is not responsible for any transactions, of course.

WANTED: Books, Manuals, ads & data relative to Western Electric receivers, amplifiers, etc.
Tad Drogoski, 507 Coal Valley Road, Jefferson Boro, PA 15025

WANTED: Brightson Blue Tubes; Radio Retailing Magazines of the 30's; 1932 issues of Radio;

TRADE: First twelve issues of Radio Age; Music Master Spruce (light tan wood) 14" dia. bell. A few things for sale SASE
Floyd A. Paul
1545 Raymond Ave.
Glendale, CA 91201 (818) 242-8961

WANTED: Crosley Pup, 50-A, 112-A, 4-29 Portable, Radiola I, VI. Clapp Eastham HZ. Superhet battery sets of 1920's and Multi-band battery sets; Zenith, Hallicrafters

FOR SALE: WD-11 replacement, WE-215-A (new) on WD-11 base. Direct plug in $15.

WANTED: Tube socket WE 215-A, honeycomb coil plugs, Grebe CR-9 tube socket, Hallicrafters S-72 like Transoceanic, Crosley Pup.

Charles Rhodes
64 South River Road
Edgewater, MD 21037

WANTED: Pre 1935 Western Electric & Northern Electric and Electrical Research Products, books, manuals, catalogs, ads, and parts on their commercial radio, audio, & motion picture sound equipment.
Tad Drogoski
507 Coal Valley Road
Jèfferson Boro, PA 15025

FREE: Are you looking for Antique Radio Parts, Radios, Tubes, schematics, etc. Send 2 stamp SASE for just released Flyer, No. 188c to:
Howard W. Granoff
2445 Lyttonsville Road
Silver Spring, MD 20910

FOR SALE: Howard 275, Tombstone (1937, Mint, Works) $100. (White, Green, & Blue Dial, Tuning Eye, 6 Tubes, clean chassis)
Mike-Radio (1957, exc (no cracks), works) $200. ('WBSM, 87.3 FM', made by Universal Publicizers in Chicago. See R.T.G.A. pg 102)
Peerless Six Transistor World Globe Radio (mid 60's, exc. not wkg.)$35.00 (black base, gold, white globe w/trim)
Send large 2 stamp S.A.S.E. for complete and up-to-date photo list.
Ron Boucher
P.O.Box 541, Goffstown, NH 03045
(603) 497-2988

FOR SALE/TRADE: Collins UR-388 Communications Receiver with cabinet and working $250.00; Very unusual Lafayette All Wave Deco Tombstone $165.00; 1959 Nordmende "Othelo" German $75.00; 1940 Siemens German Field radio with large Nazi emblems front and back $210.00; Large German Peoples' Radio with Nazi Emblems $ 135.00; AK 627 Cathedral, AK-9 breadboard, misc. Allied Catalogs, McMurdo-Silver SC comm rec.

WANTED: European Tombstones and Cathedrals; Pilot Tombstones and Cathedrals; AK-558 Cathedral; All Wave Cathedrals and Tombstones (early); Canadian Marconi Tombstones; Westinghouse 328 Tombstone.
205-880-1207 Bill Moore
1005 Fieldstone Ct., HSV Al. 35803

WANTED: Complete radio for Philco 42-1008, 4 knobs and radio band plastic insert. Also interested in old radio guide magazines, books on radio shows and personalities - posters.
N. Brown
515 Meyer Lane Unit 31
Redondo Beach; CA 90278
(213) 376-6527

WANTED: Scott & McMurdo complete sets, chassis, cabinets, and literature.
Mike Greene
19113 Alpenglow Lane
Brookeville, MD 20833
301-774-3203

WANTED: Photos, sketches, schematic, info on a SCR 60 Direct Reading Wavemeter (signal corps order 40733SC) made by General Radio. Will reimburse any costs. Thanks
Rick Ferranti, 254 Florence Avenue
Arlington, MASS 02174

WANTED: Philco hand-decorated "flower" radios: models 515 (yellow), 514 (green), 513 (gray-black), 512 (red); Philco "flower" speakers, models 215 (yellow), 214 (green), 213 (gray-black), 212 (red), 211 (brown).
Michael Prosise
3658 Daisy Road
Daisy, MD 21797
301-854-6205

SALE- Have you seen our latest catalogue of many parts-tubes-and items now available to restore and construct old radios? If not — send now for FREE illustrated catalogue
Antique Electronic Supply
688 W. First St.
Tempe, AZ 85281

WANTED: Any unusual items of Hallicrafters that may be around? These items would be used for a future museum being established. My book on Hallicrafters is now completed with Historical background and illustrated with many pictures of various models and their wiring diagrams. Please write me anything you have to offer for sale or otherwise.
Max DeHenseler
333 East 43rd St. #919
New York City, NY 10017

AVAILABLE: A number of reprints of the Famous catalogues of the top producers of wireless-radio equipment of the early days. These are fine reproductions showing many details of early equipment. All at reasonable cost. Send for the latest list of items. Am sure you will be most pleased with these hard to find details.
Arthur Aseltine
345 Glenwood St.
Ann Arbor, Michigan 48103

SALE: A most unusual twelve transistor radio in a beautiful case - made by Masterworks Radio Company circa 1950's. Should be of interest to our more modern collectors. Price reasonable. Write for details and photo. Others as well on hand.
F.A. Nichols
720 E. Eldorado
Appleton, Wisconsin 54911

SALE: Am producing replica AK boards - various sizes in stock - finished or unfinished at reasonable cost. Also do custom woodwork items Radiola V and others as well. Need Atwater Kent advertising material - all kinds. Also any AK parts available??
Larry D. Barry
212 N. 6th St.
Chambersburg, PA 17201

WANTED: Atwater Kent Breadboard parts for Model 10 (#4550 Brown), including Potentiometer and 2nd RF amplifier assembly complete and in good condition. Atwater Kent horn speaker Model M. Atwater Kent Breadboard Model 5. A-K instruction manuals. publications, & promo items. Also for Crosley and Radiola.
Cabinet and/or spare parts for King Model 80. Chassis and spare parts for David Grimes Type 5-B.
Atwater Kent Breadboard 9. A-K Breadboard parts for Model 10 (#4560), including Potentiometer and 2nd RF amplifier assembly complete and in good condition. Cabinet and/or spare parts for King Model 80. Chassis and spare parts for King Model 80. Chassis and spare parts for David Grimes Type 5-B.
Please Call George Francis collect at 803/235-1025.
WMYI 102.5 FM, Suite 801, NCNB Plaza
7 North Laurens Street
Greenville, SC 29601-2744

WANTED: Motorola "Playmate-Junior". Operating and intact, AKG D-50 Phones, RCA 54B1, Top Quality Portables, (i.e. Norelco, Nordmende, Zenith, etc.) University #312, 315 Speakers, Ampex 601, 960 Recorders, Zenith 7G01 AM-FM Table radio, All good working order, Operable.
Allan Sherry
5410 Netherland Avenue
Riverdale, NY 10471

WANTED: Any information on Sleeper Model 60 receiver and Efescaphone "Benbow" crystal set.

FOR SALE: Rogers Majestic Model 406; with tubes, very good condition except one knob not original US$40 plus shipping.
Roger Hart
314 Kensington Avenue
Westmount, Quebec, Canada H3Z 2H3
514-933-8009
6-10 p.m. or weekends

WANTED: Scott Philharmonic in Warrington cabinet, Los Angeles area
Gary Glazier
3031 El Caminito
La Crescenta, CA 91214
818-248-1693

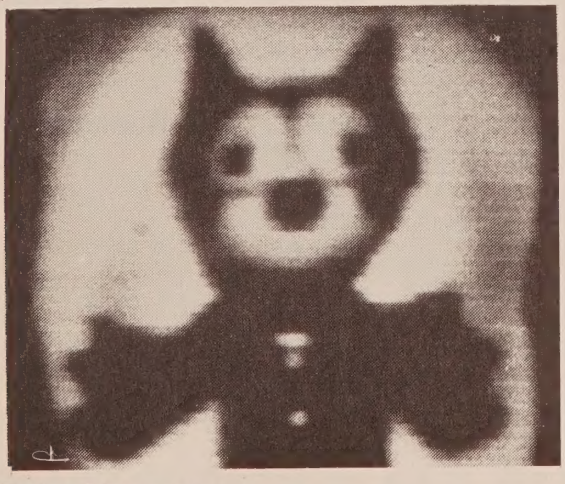
INFO WANTED: BC-9 (Wireless Improvement Co.), BC-14/SCR-54 (Connecticut). Any info such as schematics, layouts, pictures would be greatly appreciated. I will gladly pay for any costs.
Patrick Marineau
3443 Illinois Ave.
St. Louis, MO 63118

WANTED: Amplifier for Collin Kennedy 110, tube socket, schematic, historic information.
George Palermo
1444 First
Sarasota, FL 813-365-7777

FOR SALE: Radiola 30A w/99s; Radiola 24 working w99s; Radiola 28 Ant. coupler/no loop/no 99's; Brunswick Panatrope with working Radiola 28; Victor Electrola 12-1. Make Offers.
Jeff Lendaro
1107 Logan St.
Noblesville, IN 46060
317-773-3969

FELIX THE CAT

This is a 60 line, 20 frame per second picture, taken from a receiver with a 22" diameter disk. The camera is a Flying spot type with a 16" diameter disk. My book describes systems that produce images like this and with the book and my support, I believe anyone can build one of these systems for a lot less than they might pay for a nice radio. And it makes a nice addition to any display of radios that you might have.



Peter Yanczer
Telsa Electronics Co.
835 Bricken
St. Louis, MO 63122

SERVICES: Transformer rewinding. Audio, power, speaker fields, etc. Send a SASE for information.
Peter Yanczer
835 Bricken Place
St. Louis, MO 63122

SALE: Ryders Manuel - Test equipment Many assorted tubes early and late types. Battery Radios etc. Contact me for further information.
Eugene C. Bloxom
RR 1 Box 568
Chincoteague, VA 23336
804-336-3377

FOR SALE: Knight Space spanner, exc. cond. $35. Hallicrafters Sky Buddy S-19R, mint cond. $70., plus shipping.
Bill Hurni
329 Evergreen Dr.
North Wales, PA 19454

WANTED: Rider radio manuals Vol. 15, 17-23, Rider TV manuals vols. 4,5,6,9,12, Rider TV manual inde, Sams photofacts from 1946-1960, Regency transistor radio.
John Okolowicz
624 Cedar Hill Rd.,
Ambler, PA 19002 215-542-1597

FOR SALE: Cherington Radio Labs crystal set, $200; Bowman Crystal Detector, $150; Electro importing 2-slide tuner, heavy, $150; Faradon UC 2303 spark condenser, $20; Erco crystal detector, $50; Oscillation transformer, $50; DeForest OT-10 partial panel w/parts, $75; signal loose coupler, $150; Bowman spark gap, $50; Enclosed condensers, $30; Meteor loose coupler, $125; Marble base spark key, $100; Interpanel type Homebrew w/DeForest & Mignon parts, $150; DeForest P-300 Panel w/parts, $150; Western Electric 7-A Amp, $60; Pennsylvania wireless 1-tuber, $350; Cutting & Washington 11-A, $400. SASE for list.
Jim Collings,
12005 Victoria Pl.
Oklahoma City, OK 73120
405-755-4139

FOR SALE: Antique Cardwell Tuning Condenser, Type "S", patent 7-21-25. Cast brass end plates, 12 brass plates 5½"x2½, spaced 5/16", 10"L x 8"w x 6"H overall. $55.00 postpaid.

FOR SALE: Gramer Super Reg -U-Volt transformer; Stancor Isolation trans. P6160; Philmore RB 15 cap.-Res. sub. box and much more. Send a long SASE for new list.
James Fred
R 1 Box 41
Cutler, IN 46920

Televisions Bought! Over $1000.00 for pre-WWII's TVs; $20.-$500 for some Post War sets. $100 for complete Sony 8-301W; JVC Videospere, Panasonic TR005 and other Bizarre Tv s any vintage! Buying transistor novelty radios, Ratheon and Regency s... plus more.
Harry Poster
Box 1883, So. Hackensack, NJ 07606

For Sale: Still reasonably priced sets to choose from. Some reduced. New additions. Green Bendix catalin. Tortoise shell Emerson catalin. Detrola chrome front, very good. Cracked but clean brown bakelite Emerson tombstone. Philco, Jr. 84 cathedral. Crosley 125 cathedral. Tall GE tombstone. Kadette tombstone. Wood Sessions radio, clock. Wood Temple horizontal. Wood Clarion 420 small AC/DC. Zenith 1942 #7S633 wood horizontal, rounded end, black dial. Westinghouse H384T5 bakelite, circular gold bullseye dial. Cromwell brown bakelite, woven brass grill. Mirrortone tiny ivory bakelite. Several Silverstone, metal sets, Radio Boys books. Red Hopalong for trade only. SASE Ripley, Box 9374, North St. Paul, MN 55109

For Sale: Midwest Model 16-35. Mint Chassis and Cabinate $350. Photo 50 cents.
Les Rayner, 5512N 71st Place,
Scotts Dale, AZ 85253

Atwater Kent Board Sizes and Prices
(Add $15.00 for finishing.)
(Add $ 5.00 handling and U.P.S.)

SET #	L. & W.	Price	Board #
3925	18½x8½	$20.00	3601
3945	18½x8½	$20.00	3601
3955, 3960	24½x8½	$25.00	3795
3975	24½x8½	25.00	3795
3975	24½x8½	$25.00	3795
4052, 4120	24½x8½	$25.00	3795
4966, 4205,4275	26½x8½	$30.00	4056
4445-9A	26½x8½	$30.00	4056
4445-9B	24x10	$25.00	
4660-9C	20½x10	$20.00	
4340-10	31½x10	$32.50	(Radiodyne)
4550,4560,10A,10B	31½x10	$32.50	
4700-10C	29½x10	$32.50	
4700-Compact	26x10	$30.00	
4620-12B, 4375	36x10	$37.50	
4910-12C	34x10	$35.00	
4333-Md.5	15¾x10	$22.50	
4325-Md.8	24x10	$25,.00	

Radiola V tops in Birch, $25.00 plus $10.00 for finishing $5.00 shipping & handling.

Also available on special order Radiola 25, 28 loop antennas wired with original type Litz, silk covered. $70.00 plus $5.00 for U.P.S.

Other special cabinet work considered depending on availability of acurate plans or usable original.

Will consider trades on AK parts other old pre 1935 sets, horns etc. for the above boards and services. Send S.A.S.E. for reply, or call after 5 p.m. weekdays phone (717)263-3804.

The Antique Radio Club of America, Inc.

Applicaton for Membership

The Antique Radio Club of America, Inc.
81 Steeplechase Road
Devon, Pennsylvania 19333

The Antique Radio Club of America, Inc.

OBJECTIVES AND MEMBER BENEFITS

The Antique Radio Club of America, Inc. (ARCA) is a national, non-profit corporation, chartered under the laws of the Commonwealth of Kentucky. ARCA seeks to preserve the history of the development of wireless communication by encouraging the acquisition, restoration, preservation and exhibition of antique wireless and radio apparatus; and by encouraging the preservation of publications and other original records pertaining to the history and development of wireless and radio communicatins and broadcasting.

ARCA promotes social contacts among its members through meetings held several times a year in various parts of the country. Featured at these meetings are old radio equipment contests, swap sessions, talks by members and guests on subjects of interest to collectors. The meetings conclude with a catered banquet and a feature program. These meetings are self-supporting. They are not paid for out of members' annual dues.

To keep members advised of ARCA activities and activities of its members, the Club publishes a quarterly bulletin, *THE ANTIQUE RADIO GAZETTE*, which it mails to all members. The *GAZETTE* includes original articles on subjects of historical interest to collectors, news of Club activities, members' letters to the editor of the *GAZETTE*, hints on restoration of old equipment, advertisements for members listing items wanted, or for sale or swap. These ads are printed in the *GAZETTE* at no cost to the member.

The *GAZETTE* is ARCA's major tie to its members and the major expense of the Club. Approlimateley 85% of members' dues are used to cover the publication and mailing of the *GAZETTE*. The editor of the *GAZETTE* relies primarily on members for articles and pictures on subjects of interest to collectors and historians. In addition to "Letters to the Editor", members also supply comments on previously published articles, breif "How To's" dealing with hints on restoration, and "Swap Shop" ads.

Through their ARCA membership, members can increase their knowledge of their hobby, meet members with like interests, enlarge their collections and find spare parts to complete restorations. Through such activities, members contribute significantly to the enrichment and preservation of the history of radio.

MEMBERSHIP

Membership is open to anyone having a genuine interest in preserving the apparatus and history of early wireless and radio development. Dues are $12.00 per year (U. S. Dollars) in the United States, Canada and Mexico ($14.00 per year in all other countries). Fill out the application on the opposite page and mail it to ARCA, 81 Steeplechase Road, Devon, PA 19333

WE HOPE YOU'LL JOIN US!

The Antique Radio Club of America

APPLICATION FOR MEMBERSHIP
(Please type or print)

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

So that the Club may have a record of your interests in the field of early radio, please check one or more of the following boxes:

HISTORY
- Broadcasting ☐
- Commercial ☐
- Wireless Telegraphy ☐
- Vacuum Tubes ☐
- Amateur ☐
- Other ☐

COLLECTING
- Broadcast Receivers ☐
- Commercial Equipment ☐
- Vacuum Tubes ☐
- Books, Catalogs, Mags. ☐
- Amateur Gear ☐
- Wireless Equipment ☐

If a member of other radio-oriented organizations, please list: _____

_____

_____

_____

Check enclosed for $ _____ Annual dues for the calendar year, $12.00 (U. S. Dollars) in the U. S., Canada and Mexico. ($14.00 all other countries). Five year membership $50.00 U.S., Canada and Mexico ($60.00 all others).

SIGNATURE _____ DATE _____

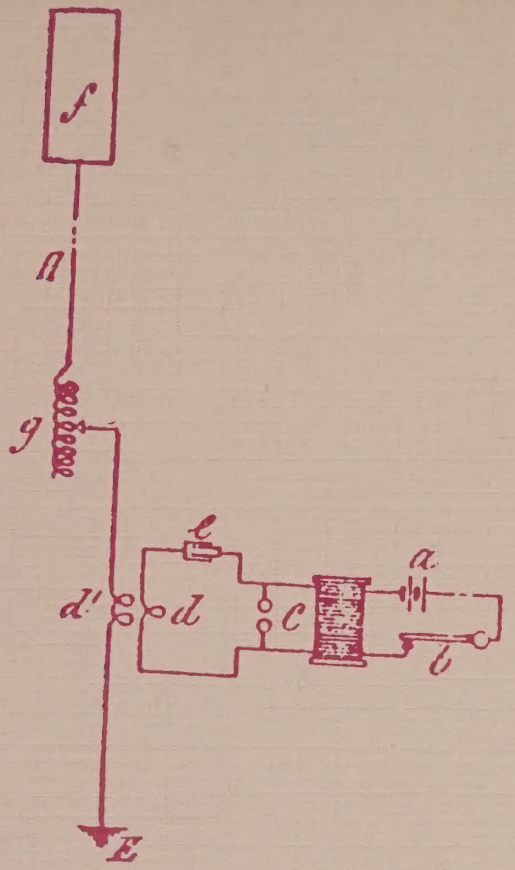
ENDORSED BY MEMBER _____ DATE _____

Please make your check payable to ARCA. Mail it and your application to:

ARCA
81 Steeplechase Road
Devon, PA 19333

Remember, the five year membership will save you time and money and protect you from membership price increases for the term of the membership.

The Antique Radio Club of America, Inc.
81 Steeplechase Road
Devon, Pennsylvania 19333



The schematic above is the two-circuit spark transmitter of Marconi's famous British Patent No. 7777 of 1900

COLLECTOR'S BOOKS

Antique Radio Restoration & Price Guide	$10.95
Seventy Years of Radio Tubes & Valves By John W. Stockes (SC)	15.95
Radio Enters The Home, 128 pgs. 8½ X 11	12.50
Radio Equipment & Supplies - 168 page reprint	12.50
1927 Radio Encyclopedia - Gernsback, 179 pgs.	11.95
Crosley Radio Catalog, circa 1923, 32 pages	4.50
Westinghouse Apparatus, circa 1920's, 8½ X 11	4.00
Donate Less To The IRS (a must for every collector)	6.95
How To Repair Old-Time Radios	9.95
Vintage Radio Handbook, 263 pages, 1000 illus.	11.95
Flick Of The Switch 1930-1950, 312 pgs., 1000 illus., (HC)	11.95
Most Often Needed Diagrams 1926-1938, 600 models	11.95
1921-1932 Collector's Guide, 264 pg., 9,000 models	11.95
Atwater Kent Radio Parts Book, 24 pages, Model 9 plus 50 speakers	4.95
The William B. Duck Co. Catalog #18 (1921) - 256 Pgs.	18.95
Modern Electronics, (75th anniversary Radio Electronics)	2.50
Wireless & Electrical Encyclopedia, The Electro Importing Co.	4.95
Atwater Kent Radio - A Look At The Atwater Kent Mfg. Co.	4.95
Instructions for Operating Grebe Radios, 64 pages pocket size	4.95
Radiola Super - Hetrodyne 2nd Harmonic	4.95
Atwater Kent Instruction Book Vol. II, an exact color duplication of the original	8.95
Grebe Syncrophase Instruction Manual, 70 pages, an excellent reproduction	10.95
Official Radio Service Manual, 1930 Gernsback, 8½ X 11, 356 pages	19.95
The Story of Nipper and His Master's Voice, 64 pages, illustrated	6.50
Radio Collectors Pin (high metal relief and porcelain)	4.95
RASCO Radio Parts - Catalog #18, 145 pgs.	8.95
Radio Station Treasury 1900-1946 — 8½X11 176 pgs.	12.95
The Continuous Wave-Technology and American Radio, 1900-1932, by Hugh G. J. Aiken, 588 pgs.	20.95
Syntony & Spark, by Hugh G. J. Aiken, 368 pgs.	14.95
Television, The Story of Scanning Disc Television — E. E. Taylor, 52 pgs.	4.95
Radio Speaker Encyclopedia, 8½X11, by Floyd A. Paul	11.90
Fifty Years of Radio, March 1938 issue of Hugo Gernsback's famous publication - 134 pgs.	14.95
Radio Manufacturers of the 1920's, Vol. 1, Very Large, by Alan Douglas	19.95
Radios — The Golden Age, 120 pgs. Full Color, by Phil Collins	14.95
David Sarnoff, biography, HB, 372 pages	14.95
Man of High Fidelity, *Edwin H. Armstrong,* PB, 272 pages	3.50
The Golden Age of Radio in the Home, HB *John Stokes*	NEW 24.95
Thomas A. Edison - A Stroke of Luck, PB, 562 pages	NEW 13.95
Saga of the Vacuum Tube by *Gerald Tyne*, 494 pages	15.95
Tesla's Experiment, PB, 162 pages	8.95
Tesla Coil Secrets, PB	6.95
The Complete Talking Machine, 8½X11, 183 pages	NEW 15.95

All orders under $35.00 enclose $1.50 postage — Orders over $35.00 shipped free.

WE HAVE DETERMINED THAT ALL OF THESE PUBLICATIONS ARE THE VERY BEST OFFSET QUALITY.
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Charleston West Virginia Area Chapter
4204 Thorn Apple Lane
Charleston, West Virginia 25313

Revised 7/1/88

1989 NEW YEAR'S RESOLUTIONS

☐ Attend ARCA-89

The 1989 Convention of the Antique Radio Club of America will be held at the Mystic, Conn. Ramada Inn (Exit 90 off of I-95) on June 1, 2, and 3, 1989. To make a room reservation, phone the Ramada at (203) 536-4281 and mention ARCA-89.

Flea Market Opens at Sun-up on Thursday, June 1 – Don't miss it!

Meet Highlights

3-Day Flea Market – Old Equip. Contest – Banquet (Fri. pm) – Seminars
Auction (Sat. am) – Tours – Local Collector Open Houses (after meet)
N. E. Museum of Wireless & Steam – 25th-Year Celebration (Thurs. pm):
1908 Massie wireless station plus equipment from spark to WWII
Voice of the 20's Museum (Sat. pm): *300 sets, 150 Atwater Kents: "bread-boards – boxes – bathtubs – cathedrals – tombstones – consoles"*

Mystic Conn. Area Highlights – Bring the Entire Family

A few of the possibilities for on-your-own or ARCA-89 tours:
Mystic Seaport: nation's largest (17 acres) maritime museum including period homes, shops and 19th-century tall ships
Marinelife Aquarium: dolphin/whale/sea-lion demonstration
Tour the USS Nautilus and WWII Subs. – U.S.C.G. Academy
Historic Homes – Windjammer Cruises – Doll & Toy Museum

Look for more details on ARCA-89 in the next Gazette.

☐ Invite a friend to join ARCA

Give the membership application form with this issue to a friend and ask him to join! The Antique Radio Club of America, established in 1972, now has over 800 members, publishes the quarterly *Gazette*, and holds an annual convention attended by hundreds of collectors.

Plan to bring another collector to ARCA-89.